



***McPC 100Mbps
(PCI Version)***

Operation Manual



FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits. This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

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To receive in-warranty service, the defective product must be received at IMC Networks no later than the end of the warranty period. The product must be accompanied by proof of purchase, satisfactory to IMC Networks, denoting product serial number and purchase date, a written description of the defect and a Return Merchandise Authorization (RMA) number issued by IMC Networks. No products will be accepted by IMC Networks which do not have an RMA number. For an RMA number, contact IMC Networks at PHONE: (800) 624-1070 (in the U.S and Canada) or (949) 465-3000 or FAX: (949) 465-3020. The end-user shall return the defective product to IMC Networks, freight, customs and handling charges prepaid. End-user agrees to accept all liability for loss of or damages to the returned product during shipment. IMC Networks shall repair or replace the returned product, at its option, and return the repaired or new product to the end-user, freight prepaid, via method to be determined by IMC Networks. IMC Networks shall not be liable for any costs of procurement of substitute goods, loss of profits, or any incidental, consequential, and/or special damages of any kind resulting from a breach of any applicable express or implied warranty, breach of any obligation arising from breach of warranty, or otherwise with respect to the manufacture and sale of any IMC Networks product, whether or not IMC Networks has been advised of the possibility of such loss or damage.

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About the McPC 100Mbps

The McPC 100Mbps is an IEEE 802.3 single-conversion PC media converter card designed to convert twisted pair (100Base-TX) connections to a variety of other fiber connections: 100 Base-SX 850 or 1300nm multi-mode or 100Base-FX 1310nm or 1550nm single-mode. Single strand versions are also available.

The McPC 100Mbps can be installed in any PC with a standard PCI slot. It includes diagnostic LEDs for each port, and a 4-pin peripheral power supply connector. The McPC 100Mbps comes with one RJ-45 connector and one pair of ST or SC connectors for the fiber.

Installing the McPC 100Mbps

Offering plug-and-play operation, the McPC 100Mbps comes ready to install, utilizing power from the PC's power supply. To install the McPC 100Mbps:

1. Turn off the PC
2. Remove its cover
3. Find an empty PCI slot
4. Align the McPC 100Mbps in the slot
5. Screw the the McPC 100Mbps into the computer casing's bracket
6. Make sure the McPC 100Mbps does not extend past the edge of the case
7. Attach the keyed mini-power connector to the McPC 100Mbps
8. Attach the male end of the **Y** connector to one of the computer's standard size power connectors
9. Replace the cover
10. Attach the cables between the McPC 100Mbps and the devices that will be interconnected

NOTE
<i>The McPC 100Mbps DOES NOT plug into the motherboard. McPC 100Mbps draws power from the computer; no additional power source is necessary.</i>

Configuring the McPC 100Mbps

Before installing, configure McPC 100Mbps for desired features which include:

- TX LinkLoss
- FX LinkLoss
- FiberAlert
- Auto Negotiation

NOTE

The default for all features except Auto Negotiation is "Disabled."

Jumper Settings

Feature	Jumper Position	ON (pins)	OFF (pins)	Factory Default
JP2	TXLL	1-2	2-3	OFF
JP3	FXLL	1-2	2-3	OFF

AutoCross

The McPC 100Mbps includes AutoCross, a feature which automatically selects between a crossover workstation or a straight-through/repeater hub connection depending on the connected device.

Auto Negotiation on McPC 100Mbps

Auto Negotiation is available on the McPC 100Mbps. When Auto Negotiation is enabled, the 100Mbps negotiates as a 100 Mbps Full-Duplex device. When the device to which the McPC 100Mbps is connected can operate at 100Mbps Full-Duplex, a link will be established.

When the twisted pair port on the other device does not have the ability to Auto Negotiate, or when a 100 Mbps Half-Duplex connection is desired, Auto Negotiation on 100Mbps must be disabled. Half and Full-Duplex settings must be manually set and match on both devices to which the McPC 100Mbps is connected. The diagram below shows a typical application, followed by a table with three possible configurations.

End to End Connection	Switch	McPC TX/FX
Half-Duplex	Manually Configure HDX	Auto Negotiation OFF
Full-Duplex	Manually Configure FDX	Auto Negotiation OFF
Full-Duplex	Auto Negotiation ON	Auto Negotiation ON

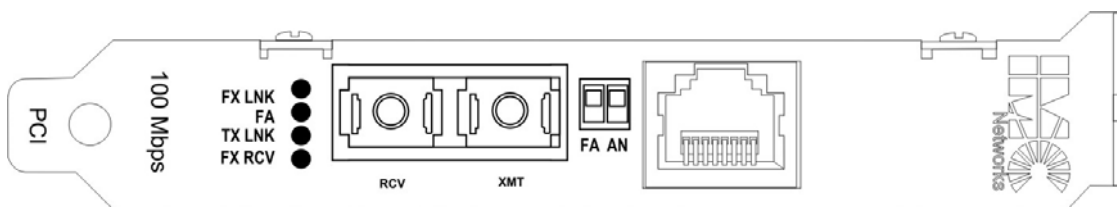
Enabling Auto Negotiation

Configure Auto Negotiation on the McPC 100Mbps by adjusting a two-position switch, labeled **AN**, on the faceplate next to the fiber connectors. Enable this feature by moving the switch to the up **ON** position. Disable (default) by moving the switch to the down **OFF** position.

LED Indicators

The McPC 100Mbps features four diagnostic LEDs. These LED functions include the following:

FX RCV	Blinks yellow when the McPC 100Mbps is receiving data
TX LNK	Glow green when a twisted pair link is established
FA	Glow green when FiberALert is enabled
FX LNK	Glow green when a fiber link is established



LinkLoss and FiberAlert

The McPC 100Mbps includes the troubleshooting features FiberAlert, TXLL, and FXLL that help locate *silent failures* on a network. Before attempting to install the module(s), understand how these features work and react to specific network configurations.

WARNING

Installing modules without understanding the effects of LinkLoss and FiberAlert can cause functioning units to appear flawed or even nonfunctional.

Link Integrity

During normal operation, link integrity pulses are transmitted by all point-to-point Ethernet devices. When an IMC Networks media converter receives valid link pulses, it knows that the device to which it is connected is up and sending pulses, and that the copper or fiber cable coming from that device is intact. The appropriate “LNK” (link) LED is lit to indicate this.

The McPC 100Mbps also sends out link pulses from its copper and fiber transmitters, but normally has no way of knowing whether the cable to the other device is intact and the link pulses are reaching the other end. The combination of FiberAlert and LinkLoss allows this information to be obtained, even when physical access to a remote device (and its link integrity LED) is not available.

FX LinkLoss (FXLL)

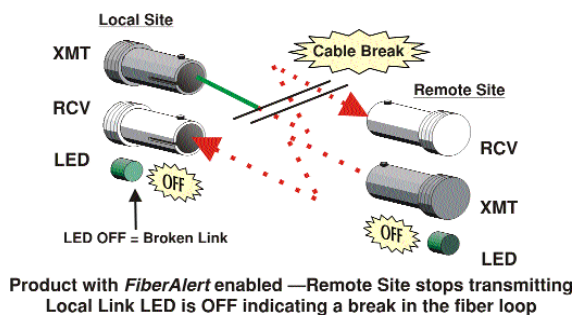
FX LinkLoss is a troubleshooting feature. When a fault occurs on the fiber segment of a conversation, FX LinkLoss detects the fault and passes this information to the twisted pair segment. If a media converter is not receiving a fiber link, FX LinkLoss disables the transmitter on the media converter's twisted pair port. This results in a loss of link on the device connected to the twisted pair port.

TX LinkLoss (TXLL)

TX LinkLoss is a troubleshooting feature. When a fault occurs on the twisted pair segment of a conversation, TX LinkLoss detects the fault and passes this information to the fiber segment. If a media converter is not receiving a twisted pair link, TX LinkLoss disables the transmitter on the media converter's fiber port. The result is in a loss of the link on the device connected to the fiber port.

FiberAlert (FA)

FiberAlert minimizes the problems associated with the loss of one strand of fiber. If a strand is unavailable, the IMC Networks device at the receiver end notes the loss of link. The device will then stop transmitting data and the link signal until a signal or link pulse is received. The result is that the link LED on BOTH sides of the fiber connection will go out indicating a fault somewhere in the fiber loop. Using FiberAlert, a local site administrator is notified of a fault and can quickly determine where a cable fault is located.



WARNING

Enable FiberAlert on one side of a media conversion only. Enabling it on both sides would keep both transmitters off indefinitely.

Enabling TX and FX LinkLoss

In order to enable the LinkLoss features, remove the cover from the unit and place the jumpers accordingly. Follow the instructions below, referencing the diagram.

1. Make sure that there is no power going to the unit by UNPLUGGING THE POWER CORD.
2. Using a Phillips screwdriver, remove the screws on the corners of the cover.
3. Remove the cover and find the three-pin jumper blocks for TX and FX LinkLoss. Adjust the shunts on the jumpers accordingly.
4. Replace the cover and tighten the screw to secure the cover.

Refer to the following diagrams and table for jumper location and settings.

Using FiberAlert and LinkLoss

The following table provides an overview of the troubleshooting features, their functionality and the recommended settings for a pair of media converters in a typical central/main site to remote site application:

LinkLoss/FiberAlert Compared			
Feature	Fault Location	Disabled LEDs	Enable At:
FX LinkLoss	Fiber	Twisted Pair	Main Site Only
TX LinkLoss	Twisted Pair	Fiber	Remote Site Only
FiberAlert	Fiber	Fiber	Remote Site Only

This will ensure that any faults, no matter where they occur, can be detected by a administrator located at the central site.

Enabling FiberAlert

Configure FiberAlert on McPC 100Mbps by adjusting a two-position switch, labeled FA, on the faceplate next to the fiber connectors. Enable this feature by moving the switch to the up **ON** position. Disable by moving the switch to the down **OFF** position (default).

Installation Troubleshooting

- During installation, first test the fiber and twisted pair connections with FiberAlert disabled. Then enable FiberAlert, if desired, just before final installation. This will reduce the feature's interference with testing.
- To test McPC 100Mbps by itself, use the appropriate fiber patch cable. First, connect McPC 100Mbps to the twisted pair device with a twisted pair cable. Next, look a single strand of fiber from the transmit port to the receive port of the media converter. Finally, verify that there are both twisted pair and fiber link on the media converter.

Specifications

Environmental

Operating Temperature

32° - 104° F (0° - 40° C)

Storage Temperature

21° - 160° F (-6° - 71° C)

Humidity:

5 - 95% (non-condensing)

Electrical

Input Load

100/240V±10% ~ 50/60Hz, 0.1/0.05A

Dimensions

A single PCI slot module for use in a PC chassis.

IMC Networks Technical Support

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Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.
2. Dust caps are installed at IMC Networks to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. Should it be necessary to disconnect the fiber device, reinstall the protective dust caps.
3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.
4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products

1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.



WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

Safety Certifications

UL/CUL: Listed to Safety of Information Technology Equipment, including Electrical Business Equipment.

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (2004/108/EC) and the Council Directive on Electrical Equipment Designed for use within Certain Voltage Limits (2006/95/EC). Certified to Safety of Information Technology Equipment, Including Electrical Business Equipment. For further details, contact IMC Networks.



European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.





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